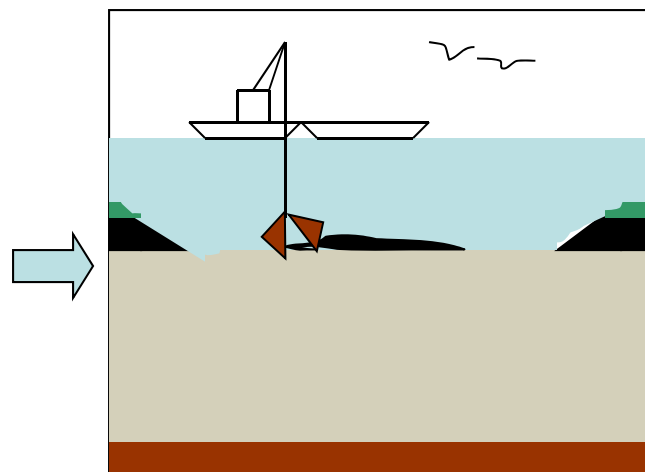
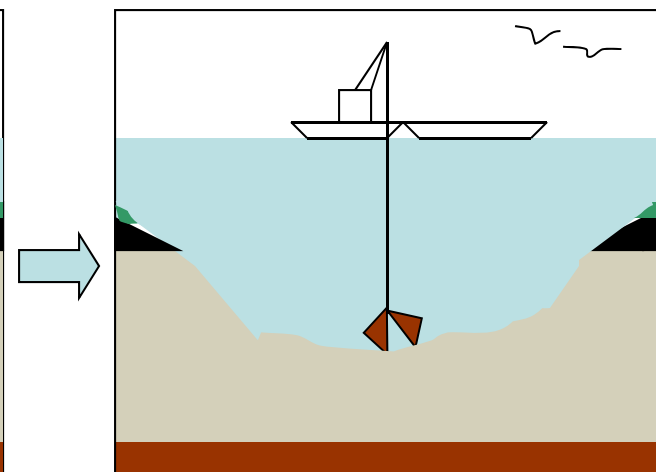


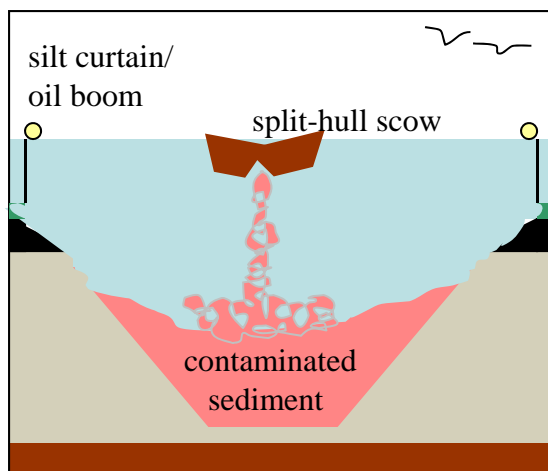
**1.** Harbor bottom as is



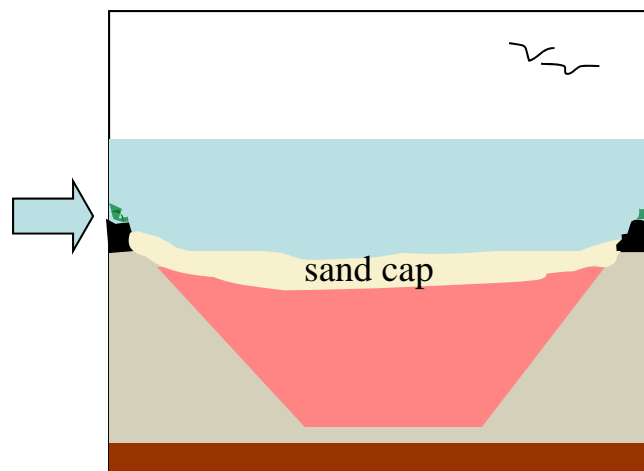
**2.** Excavation of top silts



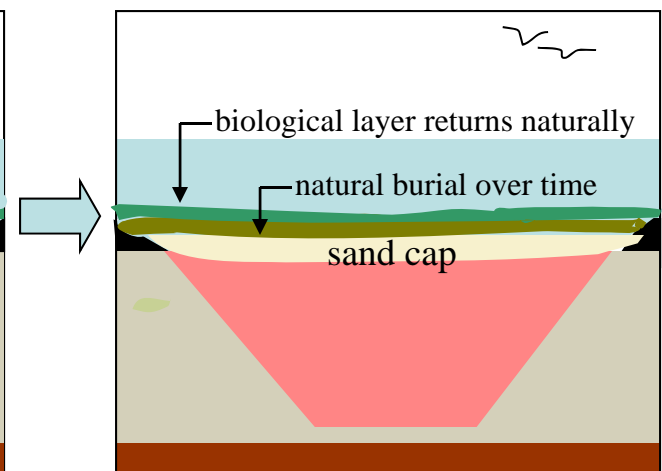
**3.** Excavation of clean sand



**4.** Placement of sediments



**5.** Placement of initial cap



**6.** Surface fills in over time

# What is a confined aquatic disposal cell?

**For illustrative purposes only – NOT TO SCALE**



CAD cell #2 for navigational sediments: **2008-09**

CAD cell #1 for navigational sediments: **2005**

“borrow pit” CAD cell for navigational sediments: **2002**

State-approved area for navigational CAD cells

Rt.6

Rt.195

Popes Island

New Bedford Harbor

hurricane barrier

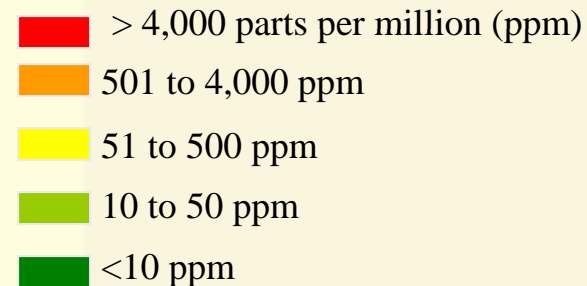
**The proposed Superfund CAD cell would be located in the state-approved area, and potentially be combined with a new navigational cell.**

Location of CAD cells



Aerovox

Color coded sediment PCB levels:



sediments above  
Superfund action  
levels from this  
stretch would  
be placed in the  
proposed Super-  
fund CAD cell

**Only lower PCB level  
Superfund sediment  
would be placed in  
the proposed Super-  
fund CAD cell**

Rt 195

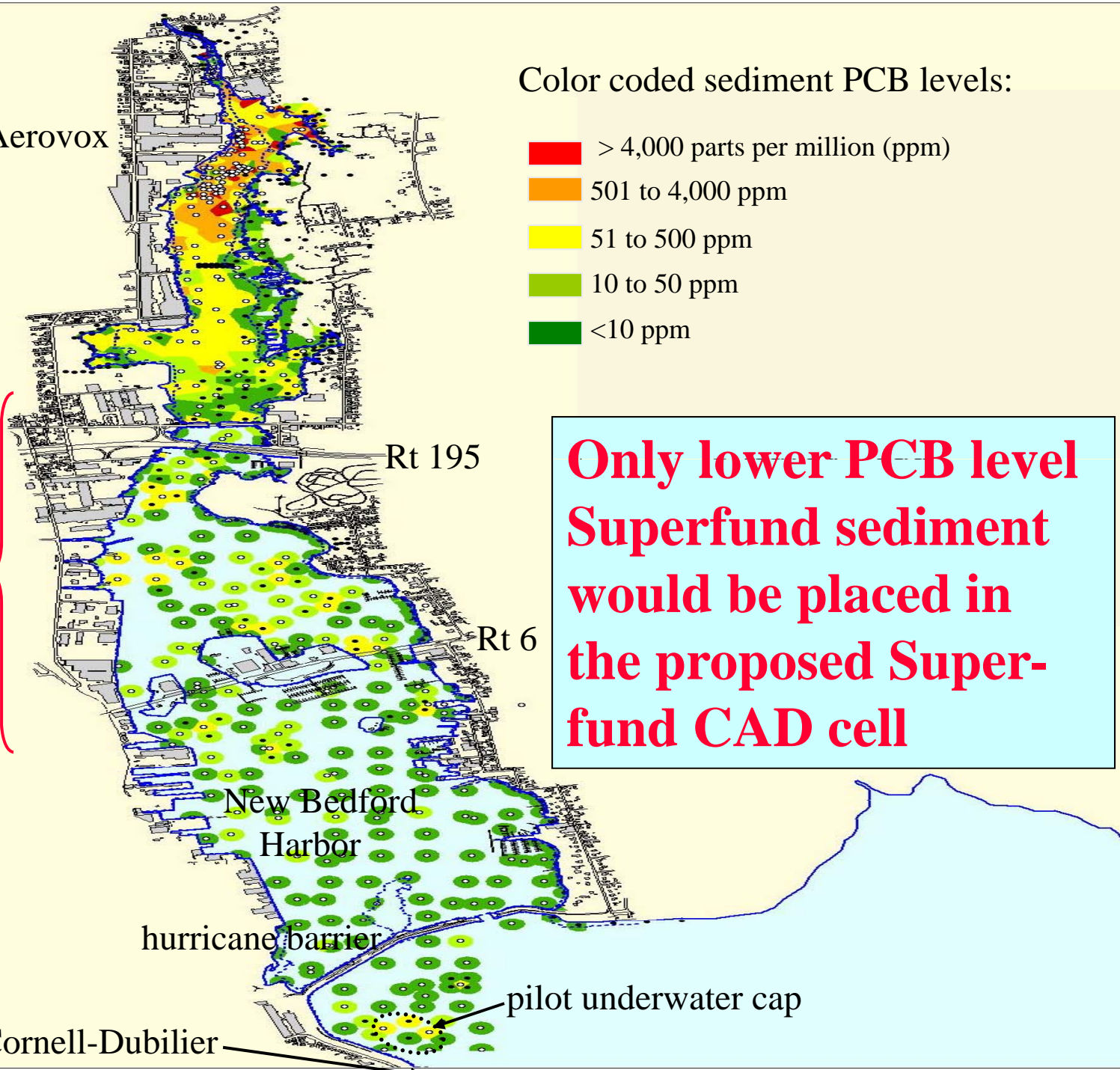
Rt 6

New Bedford  
Harbor

hurricane barrier

pilot underwater cap

Cornell-Dubilier



- the estimated PCB loss during placement of sediments into the proposed CAD cell is about 9 pounds over 3 years (prior to capping)
- this 9 pounds is about 0.06% of the 15,000 pounds of PCBs that would be disposed in the Superfund CAD cell
- this 9 pounds moves from the placed sediment into the overlying CAD cell water; controls such as silt fences and activated carbon can be used to limit migration beyond the CAD cell footprint
- once in place, a 3 foot thick cap would prevent PCBs from migrating out of the CAD cell

By comparison, current day-to-day migration of PCBs from the upper to the lower harbor is about **9 pounds every ten days**.

PCBs



CAD

Rt.6

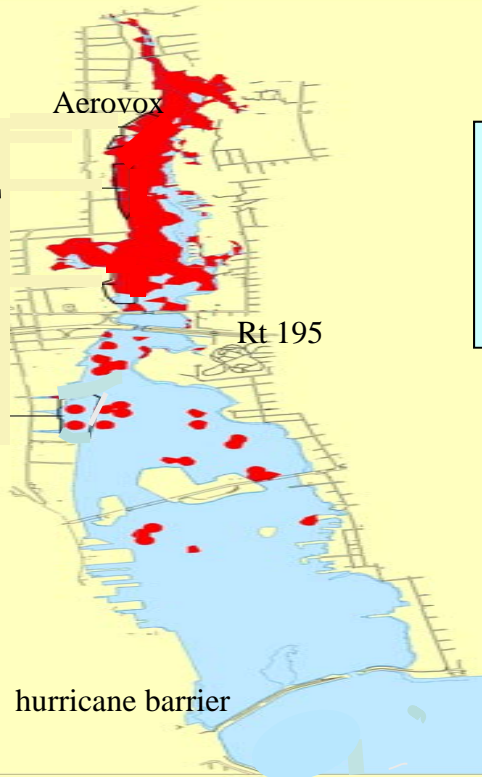
Popes Island

New Bedford Harbor

hurricane barrier

Results of computer modeling of CAD cell

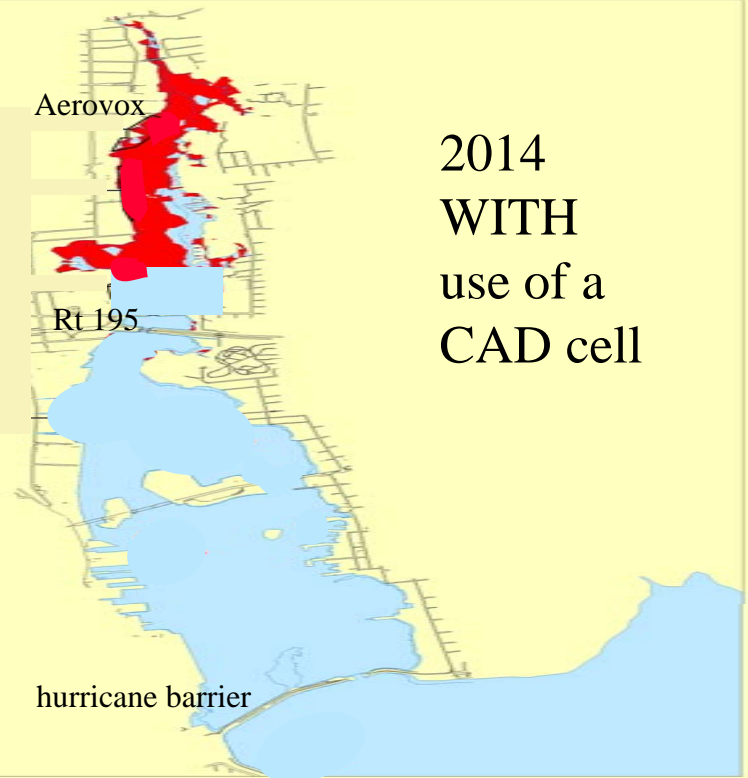
2014  
WITHOUT  
use of a  
CAD cell



A CAD cell would accelerate  
the harbor cleanup timeframe

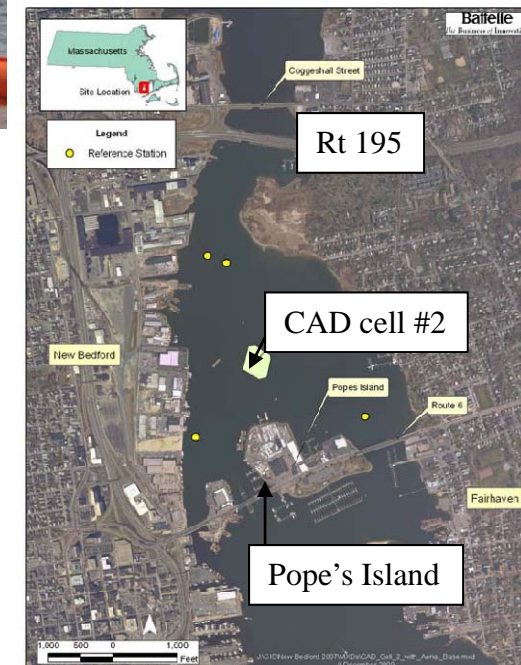
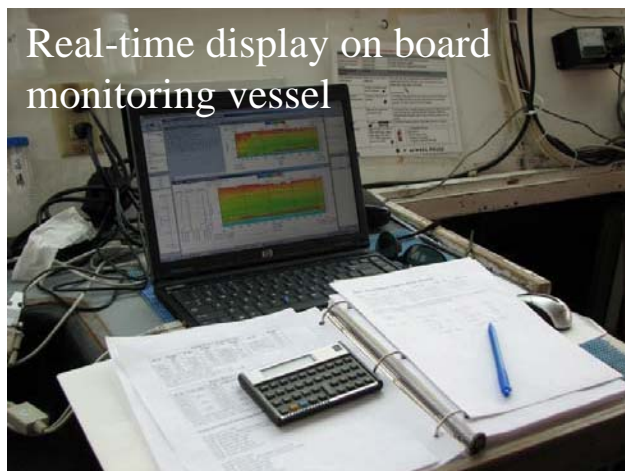
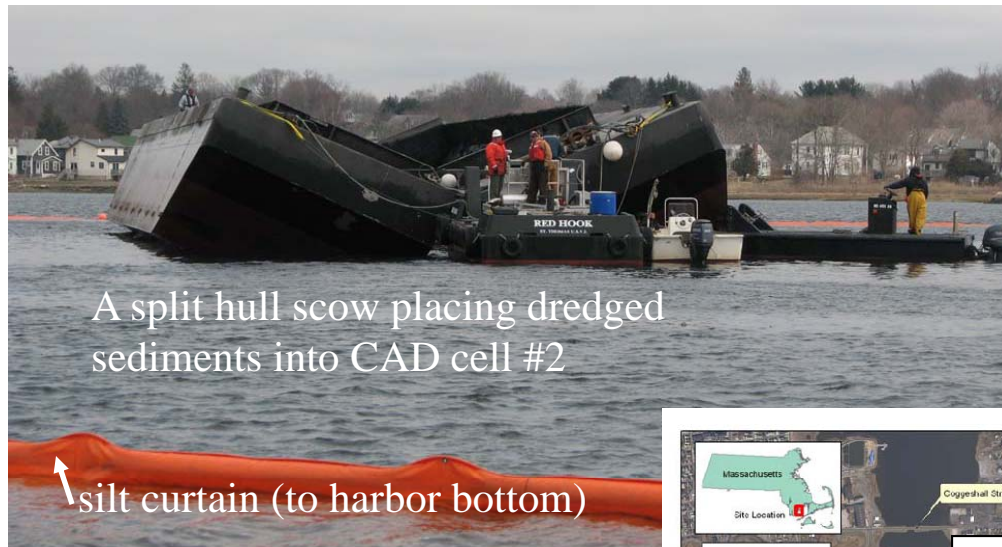
Red areas are sediments  
requiring Superfund dredging.  
Assumes a typical \$15  
million annual funding rate.

2014  
WITH  
use of a  
CAD cell



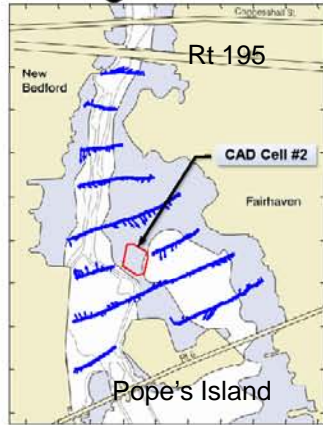
## Water Quality Monitoring of Navigational CAD Cell #2 - 2009

Since the sediments placed into navigational CAD cell #2 in 2009 were similar to the sediments proposed for a Superfund CAD cell, sophisticated monitoring was performed to demonstrate how well the CAD cell performed at containing the placed sediments.

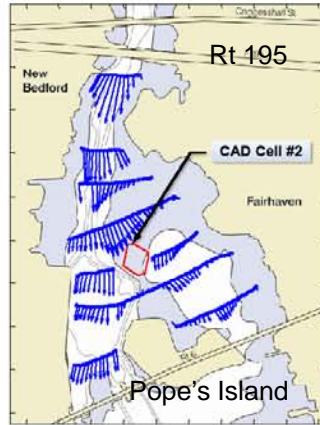


An "Acoustic Doppler Current Profiler" was used to measure turbidity during scow placement (see results on other poster).

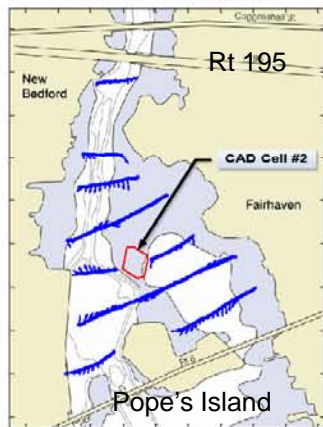
High Slack



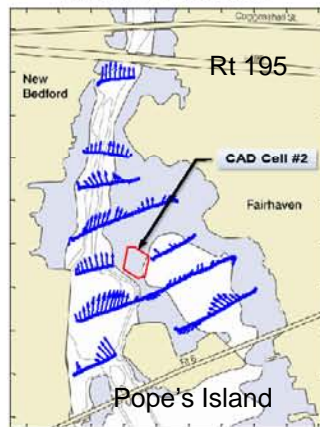
Max Ebb



Low Slack

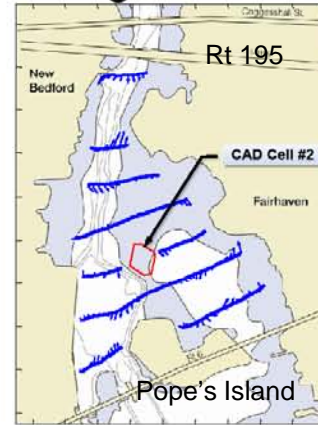


Max Flood

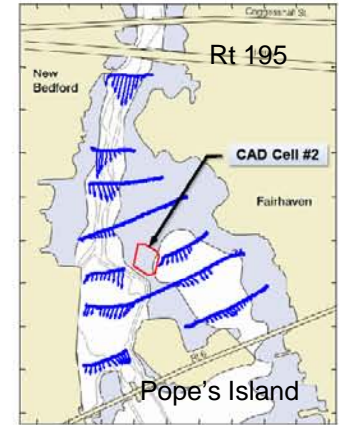


Surface Currents

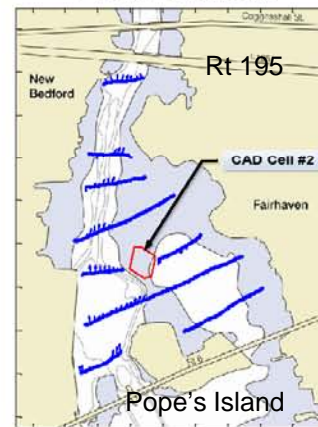
High Slack



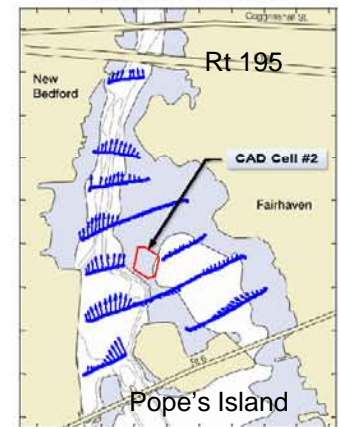
Max Ebb



Low Slack



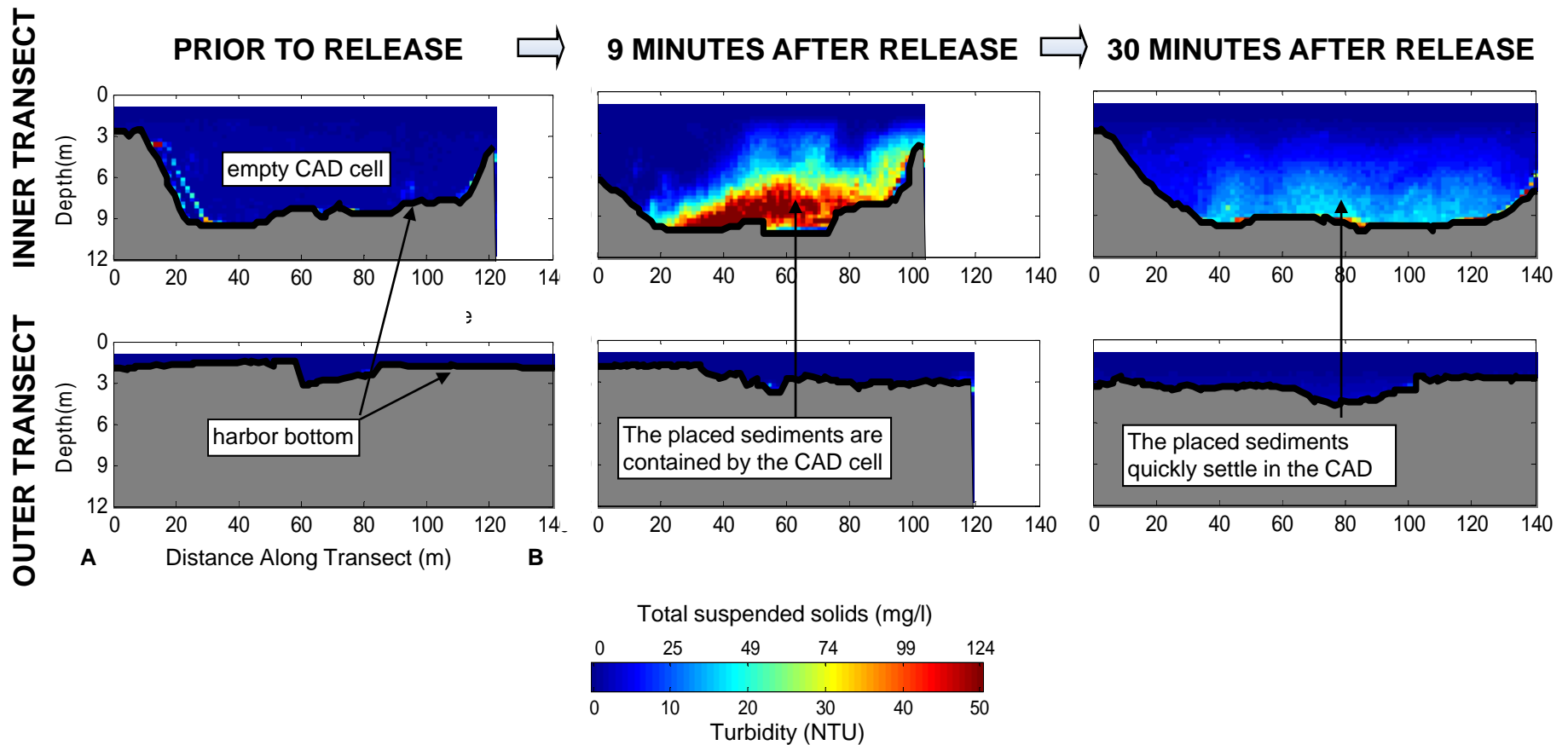
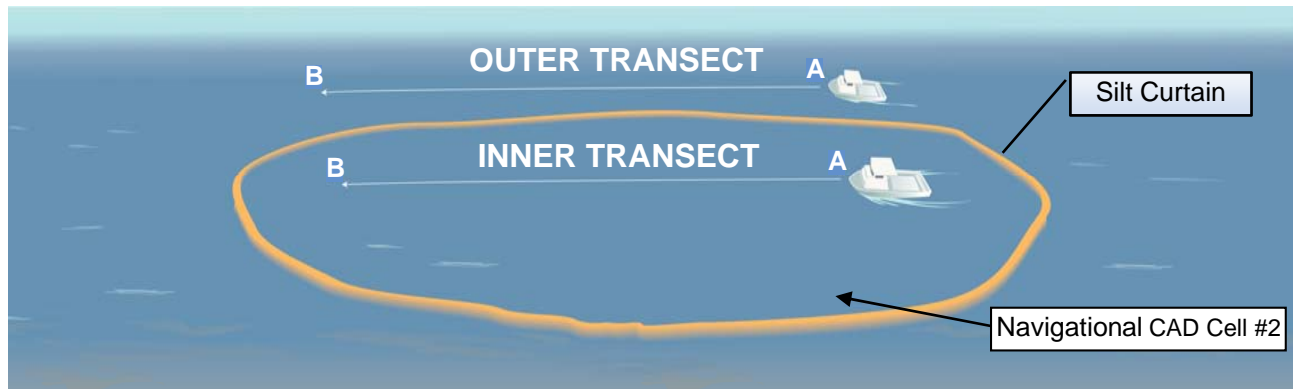
Max Flood



Bottom Currents

Note: Arrows show current directions with  
arrow length proportional to speed.

Tidal Currents Were Measured to Predict Location of any Turbidity Plume



Turbidity Measured Inside and Outside of CAD Cell #2 - 2009

## Aquatic Toxicity Measured Inside and Outside of CAD Cell #2 - 2009

In addition to measuring turbidity, water samples in and around the CAD cell were collected for aquatic toxicity testing. In these tests, three marine organisms are added to measure any toxic effect from the collected samples. In summary, these results show that placement of the dredged sediment into the CAD cell did NOT cause any acute toxicity to the test organisms.

**Table 2. Summary of Toxicity Test Results, May 20, 2009 Water Samples**

| Sample                                | Time After Release (min) | Turbidity from ADCP (NTU) | Toxicity Results                    |                           |                         |                               |                                |   |
|---------------------------------------|--------------------------|---------------------------|-------------------------------------|---------------------------|-------------------------|-------------------------------|--------------------------------|---|
|                                       |                          |                           | Sea Urchin ( <i>A. punctulata</i> ) | Mysid ( <i>A. bahia</i> ) |                         |                               | Red alga ( <i>C. parvula</i> ) |   |
|                                       |                          |                           | mean fertilization (%)              | 48-hr mean survival (%)   | 7-day mean survival (%) | 7-day mean biomass (mg/mysid) | 48-hr mean survival (%)        | 7-day mean reproduction (cystocarp/plant) |
| Lab Control                           | na                       | na                        | 97.1                                | 100                       | 84.4                    | 0.431                         | 100                            | 34.0                                      |
| Site Reference                        | na                       | < 2                       | 93.5 <sup>1</sup>                   | 100                       | 82.5                    | 0.462                         | 100                            | 34.0                                      |
| Outside silt curtain                  | 49                       | ~12                       | 95.0 <sup>1</sup>                   | 100                       | 97.5                    | 0.519                         | 100                            | 34.1                                      |
| Inside silt curtain                   | 20                       | ~70                       | 94.1 <sup>1</sup>                   | 97.5                      | 87.5                    | 0.435                         | 100                            | 34.7                                      |
| Acceptance Criteria (for Lab Control) |                          |                           | > 70                                | ≥ 90                      | ≥ 80                    | >0.2                          | no necrosis                    | ≥ 10                                      |

<sup>1</sup> Assay result significantly different compared to the laboratory control sample.

Source: 12/15/09 Battelle Technical Memo; Turbidity Monitoring and Plume Sampling Results for City Dredge Disposal at the New Bedford CAD Cell #2. Available at [www.epa.gov/ne/nbh](http://www.epa.gov/ne/nbh).